



## THE CITY OF SAN DIEGO **MANAGER'S REPORT**

DATE ISSUED: June 6, 2001 REPORT NO. 01-120

ATTENTION: Natural Resources & Culture Committee  
Agenda of June 13, 2001

SUBJECT: Advertise for the Construction of the Upgrade of Sewer Pump Stations 77A and 77B; and Authorize Amendment No. 3 to the Contract with the Engineering Firm of Brown & Caldwell for Design and Engineering Services.

### SUMMARY

Issue - What action should the City Council take regarding the planning for future Rancho Bernardo wastewater flows?

Manager's Recommendations - 1. Approve the plans and specifications for the rehabilitation of Sewer Pump Stations 77A and 77B, and authorize the City Manager to advertise and award the construction contract for the rehabilitation of Sewer Pump Stations 77A and 77B. 2. Authorize the City Manager to enter into Amendment No. 3 to the existing Agreement with Brown & Caldwell (B&C), for an amount not-to-exceed \$1,497,508, to design a brine line from Rancho Bernardo to the City's Peñasquitos Pump Station and to provide engineering services during bidding and construction for Pump Stations 77A & 77B.

Fiscal Impact - Authorize the expenditure of \$1,400,985 from CIP #46-191.0, Brine Management Force Main and Pump Station and \$96,523, from CIP #46-106.0, Sewer Pump Station Rehabilitations, for the purpose of funding Amendment No. 3 to the existing engineering consultant agreement with B&C. Previously authorized funds of \$4,064,561 are available under Resolution No. 291390, dated March 23, 1999, for the construction upgrade of Sewer Pump Stations 77A and 77B.

### BACKGROUND

The City of Escondido's Hale Avenue Resource Recovery Facility (HARRF) treats wastewater flows from the City of Escondido (Escondido), and the City of San Diego's Rancho Bernardo area. The City of San Diego (City) has an agreement with Escondido to send an average of 5.0

million gallons (mgd) per day and a peak wet weather flow (PWWF) of 7.6 mgd of wastewater to HARRF for treatment. The City also has 7.6 mgd of capacity in the Escondido Land Outfall and San Elijo Joint Power Authorities Ocean Outfall.

The flow from the City is pumped north through Pump Station 77A (PS 77A), which was built in the late 60s and is located at the southeastern tip of Lake Hodges, west of West Bernardo Drive. It pumps wastewater from the Rancho Bernardo area via a 20-inch force main approximately 6.5 miles to HARRF. Pump Station 77B (PS 77B) is a booster pump station located just north of Lake Hodges. The 20-inch force main splits into two 16-inch force mains as it crosses under Lake Hodges from PS 77A to PS 77B. On the north side of Lake Hodges, the force mains converge back to a single 20-inch force main as it heads north towards HARRF.

On March 23, 1999, the City Council approved the advertising of a construction contract for the rehabilitation of Sewer Pump Station 77A & 77B (PS 77A&B) via Resolution No. 291390. This project proposed upgrading the existing PS 77A&B, which have experienced numerous mechanical failures due to electrical malfunctions and mechanical wear. This project was put on hold pending studies on how to best manage the wastewater flows from the Rancho Bernardo area.

## DISCUSSION

The City currently sends wastewater with a high content of Total Dissolved Solids (TDS), which increases its salinity, to HARRF from two major manufacturing sources: 1) Sony Corporation, and 2) ST Microelectronics Incorporated, both within the Rancho Bernardo area.

Escondido is currently constructing a water reclamation component to their HARRF facility, to be completed within 12-18 months. As such, the TDS level of influent wastewater to HARRF must be reduced. Prior studies have concluded that removal of these brine (wastewater with high contents of dissolved salts) sources from the sewage collection system prior to treatment at HARRF would effectively reduce the TDS levels. Also, current Rancho Bernardo flow projections reveal that future PWWF from this area will be as high as 10 mgd, exceeding the current 7.6 mgd capacity at HARRF.

On July 17, 2000, the City Council approved Amendment No. 2 to the design contract with B&C for a 10 % Design Study (Study) to investigate the conveyance of wastewater flows south, to the City's Metropolitan Sewerage System (Metro System). This Study, completed in February 2001, indicated that PS77A's proposed new pumps and motors can be designed and selected to pump flows either north or south in the future. The Study also recommended two projects for managing the brine and the increasing flows in the Rancho Bernardo area.

The first project recommended is the Brine Diversion System (BDS), which would divert present brine flows of 1.3 mgd from Sony Corporation and ST Microelectronics Incorporated south to

the Peñasquitos Pump Station (PPS) of the Metro System. This system would handle 1.3 mgd initially, and in the future as much as 2.8 mgd of Rancho Bernardo brine flows.

If this project is not constructed it is contemplated that a demineralization facility would have to be constructed at HARRF at an estimated construction cost of \$12,500,000. In addition, a flow equalization system would have to be constructed in the future in the San Pasqual Valley at an estimated construction cost of \$13,000,000 to handle peak wet weather flows.

Another benefit of the BDS is that it will reduce the flows in the West Bernardo Trunk Sewer, which is nearing capacity. The planned \$5,000,000 Capital Improvement Project for this trunk sewer can be avoided with construction of the BDS.

In addition to the BDS, the following near term projects would be needed: the installation of a cathodic protection system for the PS 77A force main; upgrading the City's North City Water Reclamation Plant (NCWRP) Demineralization Facility; and sharing in the upgrade of the San Elijo Ocean Outfall. These projects are explained in more detail below.

The second project which is not recommended at this time, is the Southern Sewage Conveyance System (SSCS), which would convey in the future the remaining Rancho Bernardo flows south to the Metro System. This project would involve additional piping and valve modifications to PS 77A and construction of a 24-inch/27-inch pipeline south to the existing PPS. This project is estimated at a cost of \$24,000,000 for construction and related costs.

The following projects will provide for the handling of current and future wastewater flows from the Rancho Bernardo area:

#### *Upgrade of PS 77A&B (This Action)*

This project consists of the following work: modification of the existing PS77A to provide the City the ability to pump Rancho Bernardo wastewater either north to HARRF, or in the future, south to the Metro System; replacement of pumps to variable frequency drive pumps equipped with flywheels to mitigate system surges; replacement of the existing electrical and SCADA systems to meet current City's standards and requirements; connection of both pump stations to the City's Control Operations Management Network (COMNET) system which will allow PS 77B to be remotely operated from PS77A; and modifications at PS77A pump rooms to respond to such emergencies as pump room flooding and force main breakage in pump rooms. We anticipate issuance of the Notice to Proceed (NTP) for this work in November 2001. The estimated construction duration is 12 months. The estimated construction cost is \$2,720,300.

#### *Brine Diversion System (This Action)*

The BDS involves constructing a brine diversion system that would divert the Rancho Bernardo brine flows to the City's existing collection system. This system would require the construction

of a brine pump station next to Sony Corporation, approximately 14,500 feet of 12-inch force main, a 24-inch gravity sewer of approximately 6,800 feet in length, and the replacement of 2,000 feet of existing sewers to accommodate the flows. It is requested that the B&C Design Contract be modified to provide for design of this system. The B&C consultant fee for this modification to their present contract is \$1,497,508, which covers final design and engineering services during bidding and construction of the BDS. Additionally, this fee covers engineering services for bidding and construction for the upgrade of PS 77 A&B. The estimated construction cost of the BDS is \$8,735,000.

#### *Demineralization at the NCWRP(Future Action)*

Due to the diversion of brine flows to the PSS, it will be necessary to upgrade the NCWRP demineralization capacity at an estimated cost of \$6,000,000. This will be budgeted in FY03 as part of the NCWRP Demineralization upgrade project.

#### *PS 77A&B Cathodic Protection System (Future Action)*

Studies are underway to determine the condition of the existing force main going from PS 77 to HARRF. Initial studies reveal the force main to be in good condition, and it may not need to be upgraded for many years in the future. However, to continually provide for a reliable, safe and extended life of this force main, a cathodic protection system is recommended at an estimated cost of \$500,000. This cost will be added to a future year's budget.

#### *Upgrades for the Escondido Land Outfall & San Elijo Ocean Outfall (Future Action)*

It is envisioned that in the future, the City, as a member agency, will have to participate in the upgrade of the Escondido Land Outfall and the San Elijo Outfall, if and when those projects are implemented. An engineering study by an engineering consultant group under contract with Escondido has indicated that HARRF and the Ocean Outfall will reach their capacity by the year 2006. The City's replacement cost for this upgrade is estimated at \$3,600,000.

### RECOMMENDATIONS

It is recommended that the City proceed with the design of the BDS project at this time. MWWD is requesting Amendment No. 3 in the amount of \$1,497,508 to the B&C contract be approved to provide the final design, bidding and construction assistance services for the BDS project and also to provide bidding and construction assistance services for the upgrade of PS77A&B.

It is also recommended to go forward with the advertisement for the upgrade of PS 77A&B in order to increase their reliability and performance. The plans and specifications approved by City Council two years ago have remained the same, with the exception of minor changes with

the selection of more efficient variable speed pump motor drives at PS 77B, which have reduced the overall cost of this upgrade.

## CONCLUSION

In summary, it is recommended to proceed with the upgrade of PS 77A&B and the proposed construction of the BDS, at an estimated construction cost of \$11,455,300, versus continuing to send brine flows to HARRF, which would require at a minimum \$81 million in significant improvements to HARRF, the San Pasqual Valley Treatment Plant, the West Bernardo Trunk Sewer, and the land and ocean outfalls.

## ALTERNATIVES

1. Do not proceed with this project at this time and continue to send all flows to HARRF. This is not recommended since the City would be obligated to pay for a demineralization facility at HARRF, a flow equalization facility at San Pasqual, and our share in the costs of an upgrade to the Land and Ocean Outfalls as well as an extension to the Ocean Outfall and be required to proceed with the \$5,000,000 West Bernardo Trunk Sewer project. Also, in the near future, perhaps as early as 2006, the City would exceed its PWWF capacity rights at HARRF.
2. In addition to the brine flows, send all the remaining wastewater flows south to the Metro System at this time. This is not recommended at this time because of the additional costs in excess of \$24,000,000 and the loss of existing Metro Sewerage capacity.

Respectfully submitted,

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Metropolitan Wastewater Department  
Director

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Approved: George I. Loveland  
Senior Deputy City Manager

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